

AMENDMENTS TO THE SPECIFICATION

Replace the paragraph beginning at page 14, line 22, and ending at page 15, line 8, with:

Fig. 1

Fig. 1A: Amino acid sequence of Channelopsin1 (Chop1) SEQ ID NO: AF385748 (SEQ ID NO: 1).

Fig. 1B: Amino acid sequence of Channelopsin2 (Chop2) SEQ ID NO: AF461397 (SEQ ID NO: 2).

Fig. 1C: Amino acid sequence of bacterioopsin (Bop) from *Halobacterium salinarium* (BR) (SEQ ID NO: 3). The *leader sequence*, which is cleaved off *in vivo* and for historical reasons is not counted in the numbering of the amino acids, is indicated in small letters. The amino acids essential for proton conduction are shown in bold letters.

Fig. 1D: Comparison of the amino acid sequences of CHOP-1 (SEQ ID NO: AF461397 1) and CHOP-2 (SEQ ID NO: AF461397 2) from *Chlamydomonas reinhardtii* with that of bacteriorhodopsin from *Halobacterium salinarum* (SEQ ID NO: 3). Amino acids, which are known to interact directly with retinal in BR (Lücke et al. (1999) Science 286, 255-260 and literature cited therein) are indicated by asterisks. Amino acid positions which are the same in at least two sequences are backed in light grey. Amino acids which contribute to the H⁺-conducting network in BR and the amino acids corresponding to these in the other opsins are white against a black background. For the His 173 of CHOP-1, it was shown in the context of the invention that it is involved in the proton conduction. # indicates the position of the retinal-binding lysine. The underlined amino acid indicate the 7 transmembrane helices of the core protein.

Fig. 1E: Amino acid sequence of the CHOP-2 core protein mutant CHOP2-315/H134R) (SEQ ID NO: 4), in which histidine at position 134 is replaced by arginine.